

***CONTENT, COMMUNITY, AND COLLABORATION: ADVANCING CHILDREN'S  
LEARNING THROUGH PERSONALIZED MEDIA EXPERIENCES***

**A *READY TO LEARN TELEVISION* GRANT PROPOSAL FROM  
THE CORPORATION FOR PUBLIC BROADCASTING  
AND THE PUBLIC BROADCASTING SERVICE**

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**I. PROJECT OVERVIEW**

The Corporation for Public Broadcasting (CPB) and the Public Broadcasting Service (PBS) seek a Ready To Learn Television grant (RTL) to create a groundbreaking and comprehensive media initiative that will help to close the achievement gap for young learners from low-income households and contribute meaningful practice and research to the early learning field. Forming powerful collaborations within and across organizations devoted to early learning, media, and community engagement, the Project Team will address both invitational priorities from the Department of Education, producing and delivering comprehensive multi-platform educational media experiences to improve school readiness by focusing on science and literacy learning among low-income children ages 2-8, and combining media assets into dynamic new learning adventures that use embedded analytics and assessments to personalize the learning experience for users and provide meaningful information to parents, caregivers and educators.

The Project emphasizes the importance of *content*, *community*, and *collaboration*: the power of adaptive learning experiences, the amplifying effects of family engagement, and the critical role of partnerships to move the needle for children from America's lowest income communities. The Project's primary innovation – the creation of adaptive, personalized learning experiences – builds on the proven CPB-PBS “transmedia” model of connected learning and promises to make educational media even more powerful for children as it scaffolds and supports individual needs. Community engagement efforts implemented by new networks of early learning collaboratives will harness the reach of existing systems that support the vital work of

families, caregivers and educators to raise achievement among high-risk children, while deepening and extending the effectiveness of materials developed under the grant. Rigorous formative research on the content's learning potential, appeal, and utility will inform an iterative design and production process, and summative evaluation will assess the impact of the materials and strategies on children, families, and communities. Together, the deliverables will advance each of the goals articulated in the RFP.

The Project Team is powerfully and uniquely positioned to achieve the Department's goals. Years of experience developing, producing and implementing strong media-based learning programs with RTL funding have produced extraordinary results, including studies showing that the resources have narrowed the learning gap between children in low-income families and their more affluent peers. The Team's rich history creating award-winning television and digital media, combined with an extensive library of PBS KIDS content that positions beloved characters from iconic series such as *Curious George* and *The Cat in the Hat Knows a Lot About That!* as trusted friends and guides on children's learning adventures, is unequalled in the children's media world. The unsurpassed reach of public media is freely available to more than 99% of the American public, ensuring that nearly all children have access to the rich, evidence-based resources developed by the Project Team. Moreover, PBS content over-indexes with minority viewers and low-income populations that RTL was created to serve, and PBS is committed to reflecting the cultural diversity of America's children through PBS KIDS content. The Team's power to form high-impact partnerships with organizations at the national, state, and local levels, and its ability to convene local stations, early-childhood educators, subject-matter experts, and community organizations in support of children's success, is likewise unmatched.

## **II. PROJECT DESIGN**

### **Strategic Approach: From Transmedia to Adaptive Media – and the Importance of Content, Community, and Collaboration**

The Project is grounded in the Team’s unrivaled experience building effective learning tools with Ready To Learn (RTL) funding; demonstrated results of positive impact on target audiences; and the authentic needs of children and communities. The Project design is built on two main premises:

1. Research-based, connected, and adaptive media experiences that personalize learning for children can produce greater gains, especially for children from low-income families.
2. Children perform better when families and communities support their learning; therefore, authentically embedding the Project’s content within the community, and collaborating at all levels with partners who work to support children, will amplify learning outcomes.

***Content:*** The CPB-PBS content model relies on a rich combination of high-quality television/video + games + offline activities + parent involvement + community engagement to help move the needle for all children. During the 2010–2015 grant cycle, the Project Team built a library of successful transmedia content centered on the premise that children’s learning would be enhanced through exposure to multi-platform media experiences connected by narrative storylines. Over the course of grant, research indicated that learning was further heightened when the media experience was not only connected across devices and platforms, but also meaningfully curated and organized for users. (McCarthy, Li, Atienza, Sexton & Tiu, 2013; McCarthy, Li, & Tiu, 2012; EDC/SRI, in preparation.) Building on these early findings, and advancing the successes realized with Federal funds to date, CPB and PBS now propose to develop a new collection of research-based, dynamically sequenced, and personalized learning

experiences across multiple media types and learning environments. These new media experiences will automatically adapt to users' learning needs, a major innovation driven by the PBS KIDS Learning Analytics Platform, a new collection of learning analytics and assessment tools that builds on R&D supported by 2010-2015 RTL funding. A rigorous, aligned research agenda will inform content development and help identify the optimal mix of asset types, game play mechanics, and support levels to ensure the greatest learning gains.

***Community:*** The Project Team will innovate not only with how content is delivered, but also with how communities engage with that content. While the quality and effectiveness of the content is paramount, the ease with which learners and the influential adults in their lives can access the content is also critical. The Project therefore includes multiple strategies to deliver the content to target audiences and ultimately bring the most successful strategies to scale. Because learning is an anytime, anyplace opportunity, the Team will work strategically with national and local partners to meet learners where they are: online, on air, and in the community. This “everywhere” approach is especially valuable to children from low-income families and in high-need communities who often have less support developing skills that enable academic success in disciplines such as science and literacy, or access to digital technology. The Project will also embed Universal Design for Learning (UDL) principles to guide the development of adaptive learning environments that can accommodate the needs of individual learners, including individuals with disabilities.

At the local level, public media stations will establish Community Collaboratives for Early Learning and Media and will serve as the educational media partner within networks of community organizations that will include early childhood educators and providers, public libraries, science centers, health clinics, and housing agencies that serve high-need populations.

These Collaboratives will connect RTL content to children, families, and providers through existing and new engagement efforts, working collectively to meet the individual needs of their communities and set children on the path to success.

***Collaboration:*** The importance of collaboration within and across fields that support and influence children and families is a lynchpin of the Project. These powerful partnerships between producers, distributors, researchers, classroom educators, subject matter experts, public media stations, and community organizations are integral to the development, creation, and distribution/implementation of the content, and its overall impact on children in need. CPB and PBS, with decades of experience modeling collaboration at the highest levels both locally and nationally, are uniquely positioned to assemble the vast network of partners identified throughout the proposal. *A logic model in the Appendix articulates the Project's theory of action.*

### **Significance of the Project: Addressing Critical Needs**

The first five years of life are critical to a child's healthy development, and early learning sets the stage for later academic success (National Research Council and Institute of Medicine, 2000; U.S. Department of Health and Human Services; Kids Count). And yet, millions of children from low-income households lack access to high-quality early learning opportunities, and enter Kindergarten with a deficit nearly impossible to erase (Economic Policy Institute; National Science Board 2014; Camilli et al. 2010; Chambers et al. 2010; Flanagan and McPhee 2009). As the National Science Board (2014) points out, "the large gaps in student performance at the beginning of formal schooling suggest that nonschool factors play a big role in these disparities." The Project's targeted, evidence-based strategies to reach, support and impact young learners in their early years will help to close these gaps, especially in the areas of science and literacy learning, areas widely considered to be of particular national importance.

Studies consistently show that Americans lag behind most other developed nations in science proficiency (NAEP 2011, OECD 2013) and leaders affirm that science education is critical to the nation’s wealth, welfare, and security in the 21<sup>st</sup> century (President’s Council of Advisors on Science and Technology, 2010). The National Science Teachers Association and the National Research Council (2007, 2012) agree that young children have the capacity for science learning and inquiry, but note that many are not exposed to opportunities to learn the science practices that can foster curiosity and lay the foundation for science learning in the classroom and throughout their lives. Underserved children not only have lower exposure to and proficiency with science concepts, but also have significantly reduced exposure to books and reading opportunities that set the stage for lifelong learning and academic and social wellbeing. As it works to level the playing field for children in need, especially in these two areas, the Project aims to ensure that all children enter school ready to learn and ready to succeed.

**Project Goal, Activities, & Deliverables**

The Project’s primary goal is *to improve learning outcomes for young children, especially those from low-income families, in order to prepare them for success in school and in life*. The Team has identified the following strategies and proposes the following activities to achieve its goal:

<b><i>Strategic Activities to Improve Learning Outcomes for Young Children</i></b>	
<b>1.</b>	<i>Enhance children’s science and literacy learning through the production of high-quality educational media content that is delivered through public media’s proven methods and personalized to support children in greatest need.</i>
<b>2.</b>	<i>Advance analytics and assessment strategies in order to create personalized digital and offline learning experiences that more deeply support users, enhance learning, and generate a vital feedback loop for families, caregivers, educators, and content creators.</i>
<b>3.</b>	<i>Leverage an iterative design process informed by rigorous formative research, to maximize outcomes and contribute meaningful research to the early learning field about the ways young children can learn most effectively from innovative media experiences, specifically in the areas of literacy and science.</i>
<b>4.</b>	<i>Surround children with opportunities for learning anytime, anywhere through connected distribution strategies and design features that support accessibility, in order to reach greater numbers while amplifying the impact of the content created.</i>
<b>5.</b>	<i>Increase the capacity of communities to support the early learning of high-need children by a)</i>

*establishing early learning collaboratives that connect public media stations with community organizations, to customize and implement Project content in diverse learning environments, and b) empower families, caregivers, and educators in their efforts to set children on the path to academic success.*

**6.** *Explore the next frontier of technology in educational contexts through the research and development of innovative learning experiences for children.*

The Project will bring together experts in subject matter and pedagogy, researchers, educators, producers and distributors to create deliverables that include:

- Learning Packs: multi-media, multi-platform adventures that guide learners through the inquiry process and use integrated assessment and analytics to adapt the experience to individual needs and provide children with personalized support for science and literacy learning.
- An exciting collection of new broadcast and digital content – including television episodes, short-form video series, games, apps, offline activities, and Parent Child Activity Videos – for an all-new property that will integrate science and literacy; for an all-new science property that will bring culturally diverse talent to children’s media production; for a recently green-lit space and Earth science property, *Ready, Jet, Go!*; as well as for proven and beloved series *The Cat in the Hat Knows a Lot About That!* (Random House), *Curious George* (WGBH and NBC Universal), and *Ruff Ruffman* (WGBH).
- A new science Learning Framework that emphasizes the inquiry process, and an updated literacy Framework that amplifies the importance of functional literacy, reading comprehension, and informational texts, to drive content creation under the Project.
- Continued innovation in learning technologies and distribution platforms, including collaborative play through PBS KIDS’ new virtual world, Kart Kingdom, and R&D into new technologies such as connected toys, wearables, and speech recognition tools that may help to facilitate hands-on and active learning away from screens.

- A network of Community Collaboratives for Early Learning and Media that brings local public media stations together with networks of community partners to deploy the Project’s content and engagement interventions in ways that have the greatest impact on children at the local level, and to share best practices for engagement within the public media system.
- A series of outreach interventions for use by Collaboratives and informal/formal learning environments in communities nationwide, including Family Creative Learning workshops, camps for after school and summer learning, and flexible activities designed to work in a variety of formats that expand the reach, use, and impact of the assets.
- A comprehensive national/local family, caregiver, and educator engagement strategy that engages these audiences regularly and supports their efforts to prepare children in their care for academic success.

### **Children’s Inquiry Process – Science and Beyond**

Research shows that media – television, films, games, and more – can be effective tools for science learning, especially among young children (National Research Council, 2009). PBS KIDS has a long history of tapping into children’s natural curiosity through science programming, and the topics resonate strongly with the PBS KIDS audience. With 2015-2020 RTL funding, the Project Team will expand and deepen science content with the same holistic methods as the math and literacy content programs developed under previous RTL grants, which began with carefully constructed Learning Frameworks that inform and drive content creation.

Young children, naturally curious and motivated to explore and make sense of the world around them, already exhibit the early inquiry skills that the National Research Council (NRC) calls “central to science learning” (1996, p. 2). For preschoolers, the process of asking questions, investigating, creating/testing, and reflecting occurs through everyday play and discovery.

(Brenneman, 2010; Hamlin & Wisneski, 2012; Christenson & James, 2015). Moreover, just as young children's innate curiosity about natural phenomena helps them to build foundational experiences for later science learning, it also affects the development of other cognitive skills including literacy and mathematics (Worth, 2010). No matter the context, young children's ability to engage in the inquiry process helps them understand the world around them by helping answer questions sparked by their own natural curiosity.

***Integrating Science and Literacy – Contextualizing Literacy Skills and Practices:***

Striking similarities exist between many facets of science and literacy learning. For example, the inquiry process in which children engage when “doing science” parallels the process of developing literacy skills such as vocabulary, writing, and reading comprehension (especially of informational texts). In essence, “the sense-making tools of science are consistent with, if not identical to, those of literacy.” (Pearson et al., 2010, p. 460). The National Science Teachers Association (NSTA) calls science and literacy a natural pairing, noting that “[s]cience provides an authentic and engaging context for literacy learning, and literacy learning can support students in learning science” (Shapiro, 2006 quoting Pearson, para. 1). In discussing best practices, practitioners and curriculum experts involved in the development of the Next Generation Science Standards pointed to overlapping skills between good readers, communicators, and scientists, noting that “students have difficulty reading and communicating about the science if they don't have science knowledge. Likewise, students have difficulty learning science if they don't have literacy skills” (Minnesota STEM Teacher Center, 2015, para. 13).

Given the overlap in processes and the interdependency of the curriculum areas, The National Research Council Framework for K-12 Science Education (2011) highlights the benefits of an integrated approach, advocating for science practices that represent the process

used by professional scientists and engineers, including reading science text and communicating through specialized conversation and writing. As the Common Core and other state standards illustrate, the reading and understanding of informational text is becoming even more important for academic success. For these reasons, the Project will strategically integrate science and literacy skill building in new content developed under the Project.

### **Activities and Deliverables**

***Strategic Activity #1: Enhance children’s science and literacy learning through the production of high-quality educational media content that is delivered through public media’s proven methods and personalized to support children in greatest need.***

### **Approach to Content Development**

Recognizing children’s developmental need to play and explore in order to learn and apply what they’ve learned, the Project will emphasize functional learning – teaching discrete skills and allowing children to experiment with the application of those skills in a dynamic learning environment. The Project will contextualize foundational science and literacy and emphasize the process of inquiry within and beyond traditional science content areas.

**1. Deliverable: Learning Frameworks:** All content and tools developed for this Project will be aligned with a new science Learning Framework and an enhanced literacy Learning Framework. These detailed guides for producers and the PBS KIDS team will outline children's learning competencies at different age ranges and lay the foundation for all PBS KIDS content in a given subject area, ensuring that it reflects rigorous academic standards, learning progressions, and current research. In the 2015-2020 RTL grant cycle, the Frameworks will include Universal Design for Learning (UDL) guidelines to accommodate learning differences and serve those with

disabilities, and will play an integral role in the studies undertaken by the Team's research partners.

The Project Team will work with experts in science and literacy, special education, and UDL, as well as classroom educators, to ensure the Frameworks provide an age-appropriate approach to teaching the concepts. A full list of advisors for both Learning Frameworks can be found under section IV. Management Plan; biographies are located in the Appendix.

***Science Learning Framework:*** Working with a team of practicing classroom educators and experts in science and early childhood learning, the Team will develop a rigorous science Learning Framework to drive the production of all new science content. Existing PBS KIDS content will be mapped to the Framework to determine which core concepts are addressed and which content areas need further exploration, in order to deliver comprehensive science resources that encourage exploration and inquiry in many different areas of science.

This science Learning Framework will focus first and foremost on age-appropriate, fundamental science and engineering practices modeled on those outlined by the Next Generation Science Standards (NGSS) for K-Second Grade, including asking questions and defining problems; developing and using models; planning and carrying out investigations; analyzing and interpreting data; using mathematics and computational thinking; constructing explanations and designing solutions; engaging in argument from evidence; and obtaining, evaluating, and communicating information. With these practices in mind, the Framework will emphasize the four core domains of the NGSS: (1) Life Science; (2) Earth and Space Science; (3) Physical Science; and (4) Technology and Engineering. These four areas will be broken down into specific subsets of focus aligned with NGSS Core Ideas. The new Framework will be further informed by the National Research Council of the National Academy of Sciences' A

*Framework for K-12 Science Education*; the National Science Teachers Association (NSTA) position statement on Early Childhood Science Education endorsed by The National Association for the Education of Young Children (NAEYC); the Common Core ELA-Literacy Standards for Reading Informational Text (CCSS-ELA-Literacy.RI); and, the PBS Parents Child Development Tracker, an age-based breakdown of the core academic and social competences for children ages 2-8. The Framework will note connections between science and engineering practices and concepts and other academic areas, including math and literacy, to ensure that children ages 2-8 develop a real-world, contextualized understanding of science.

***Literacy Learning Framework Update:*** The CPB-PBS literacy Learning Framework was initially developed with the support of RTL literacy funding. The Framework aligns with the CCSS-ELA and focuses on four major content areas: (1) Foundational Reading Skills; (2) Characteristics of and Comprehension of Informational and Fictional Texts; (3) Language, Speaking and Listening; (4) Writing. The literacy Learning Framework is also informed by the recommendations of the National Reading Panel, the National Early Childhood Literacy Panel, and the literacy recommendations of NAEYC. The Framework has recently been updated to reflect the latest and best thinking in the field; notably, it now includes “big picture” information about how children learn to read, make sense and meaning of the content they read, and present cohesive ideas clearly, both orally and in writing. The Framework now explains *what* is important for children to learn, and *why* these skills are essential to a child’s literacy growth and content knowledge. In RTL 2015-2020, the Project Team will work continue to work with advisors to reflect on and revise the Framework based on changes in literacy education theory and pedagogy and with an eye on amplifying literacy learning in the context of science.

## 2. Deliverable: New Broadcast and Digital Content for PBS KIDS Science and Literacy

**Series:** A robust collection of engaging, multi-platform content for new and legacy PBS KIDS series will be created under the grant. Two all-new properties – one focused on science and the other on literacy – and *Ready Jet Go!*, a recently green lit Earth and space science series from Wind Dancer Films and Craig Bartlett, the creator of *Dinosaur Train*, will introduce millions of young children to diverse, relatable characters that inspire learning on and off the screen. Exciting new content for popular and proven PBS KIDS series will center around beloved characters from *Curious George*, *The Cat in the Hat Knows a Lot About That!* and *Ruff Ruffman* to dig even deeper into the inquiry process and the four main science domains identified in the science Learning Framework. Additional content may also be created for *Wild Kratts* and *Dinosaur Train*, should the new science Framework reveal any gaps in the learning concepts covered by the projects proposed above. The table below summarizes the new deliverables to be produced under the grant, followed by brief descriptions of each property.

**Table 1. Content Deliverables to be Produced with 2015-2020 RTL Funding**

								
	The Cat in the Hat Knows a Lot About That Random House	Curious George NBC Universal & WGBH	New Science Property TBD	Ready Jet Go! Wind Dancer Films	Ruff Ruffman, YouTube Star WGBH	New Literacy Property TBD	Wild Kratts Chris & Martin Kratt	Dinosaur Train The Jim Henson Company
AGE	3-5	3-5	3-5	4-8	4-8	4-8	4-8	3-5
CURRICULUM	Scientific Inquiry Life Sciences	Scientific Inquiry Science & Engineering Math	Science TBD: Physical sciences, engineering or other identified gaps	Scientific Inquiry Space & Earth Science	Scientific inquiry Life Sciences, Physical Sciences, Earth & Space Science, Engineering & Technology	Literacy - Informational Text	Scientific Inquiry Life Sciences	Scientific Inquiry Life Sciences Natural History & Paleontology
DELIVERABLES	New episodes, Learning Pack, and additional transmedia content	New transmedia content and Learning Pack.	New video segments, Learning Pack & additional transmedia content	New episodes, Learning Pack, & additional transmedia content	New short-form series: streaming videos and Learning Pack.	New broadcast series: episodes, Learning Pack, & additional transmedia content	(Potential to produce new digital content to flesh out science coverage per needs determined by new Framework)	(Potential to produce new digital content to flesh out science coverage per needs determined by new Framework)

- ***New Science Property:*** In Year 1, PBS will seek out 3-5 new producers with culturally diverse backgrounds to work with educators, advisors, and researchers to develop new video content segments and digital experiences focused on gaps in the science Learning Framework. This content will be distributed across platforms and, after extensive research and development, one property will be green-lit to become a new series or digital-only experience in Years 4-5. This project will add diverse voices to public media content and the production community at large, while also allowing the Project team to experiment with new ways of creating and distributing our content.
- ***New Literacy property with Emphasis on Science Informational Text:*** In Year 1, PBS KIDS will issue an RFP for a new literacy series for children ages 4-8, to explore the characteristics and comprehension of informational (non-fiction) text: text that is primarily “written with the purpose of conveying information about the natural and social world” (Duke, 2003). Research suggests that engaging with such texts offers many benefits for children, including enhanced vocabulary and language skills, which are considered foundational to their formal literacy education (Massey, 2014). Despite these benefits, a recent study of preschool through third-grade classrooms and home environments indicates that young children’s exposure to informational texts is very limited (Yopp & Yopp, 2006). The RFP will require early and ongoing formative research to determine the most appropriate age group for the series, as well as to test its appeal and learning potential. Though the property is envisioned foremost as a literacy series, science will be a key theme. The literacy curriculum will be presented through storylines and endearing characters within a broad science narrative, illustrating how informational texts add to children’s understanding of the natural world and how they can be used to further scientific inquiry. New digital content to

include web games, apps and adaptive, personalized learning experiences will invite kids to explore and play with concepts.

- ***Ready Jet Go! (Recently Green lit Property)***. *Ready Jet Go! (RJG)* is an animated comedy series that teaches a variety of early space and Earth science concepts, and offers an introductory explanation of our solar system. The show is about two neighborhood kids — a boy with an all-consuming drive for scientific facts and a girl with an overwhelming passion for science fiction. They befriend the new kid on their street, Jet Propulsion, whose family happens to be aliens. The series encourages children to get outside and get to know the Earth, and to understand its place in the larger universe. *RJG* is supported by Dr. Amy Mainzer, Senior Research Scientist at NASA’s Jet Propulsion Laboratory, a dynamic astrophysicist who hosts the live-action segments that appear between each show’s two 11-minute episodes and will serve as a role model to inspire girls’ interest in STEM subjects and careers.
- ***Curious George***. Curiosity is the basis for all scientific inquiry, and it’s a characteristic that children fully embody. Based on the classic book, this number one series for kids ages 2-5 celebrates children’s natural inquisitive spirit and introduces them to science and engineering concepts that can guide their own investigations. Like all kids, George wants to know how things work. He takes things apart, measures, and observes, modeling creative thinking and trial-and-error along the way. The show’s interstitials introduce young viewers to real-life engineering processes and projects, extending the learning from George’s world to theirs.
- ***The Cat in the Hat Knows a Lot About That!*** This series supports young children’s science learning by introducing scientific inquiry skills, teaching core science concepts and vocabulary. Voiced by award-winning actor Martin Short, Dr. Seuss’s Cat in the Hat guides

his friends Sally and Nick on fun-filled adventures where they make natural-science discoveries, such as learning how bees make honey or why owls sleep during the day.

- ***Ruff Ruffman, YouTube Star (w.t.)*** will feature short, YouTube-inspired segments starring Ruff and the rest of the Ruffman clan. Every episode will be inspired by questions from real kids who will model science practices, asking questions and making observations to better understand their world, and asking questions about how it works. Ruff will pick up the thread, modeling higher order practices—such as planning investigations, using evidence to draw conclusions, and testing and refining ideas—as he tries to help kids answer questions and design solutions to their problems. Through it all, Ruff will model scientific attitudes including curiosity, perseverance, and risk-taking.

### **3. Deliverable: Learning Packs – Adaptive, Personalized Learning Experiences:**

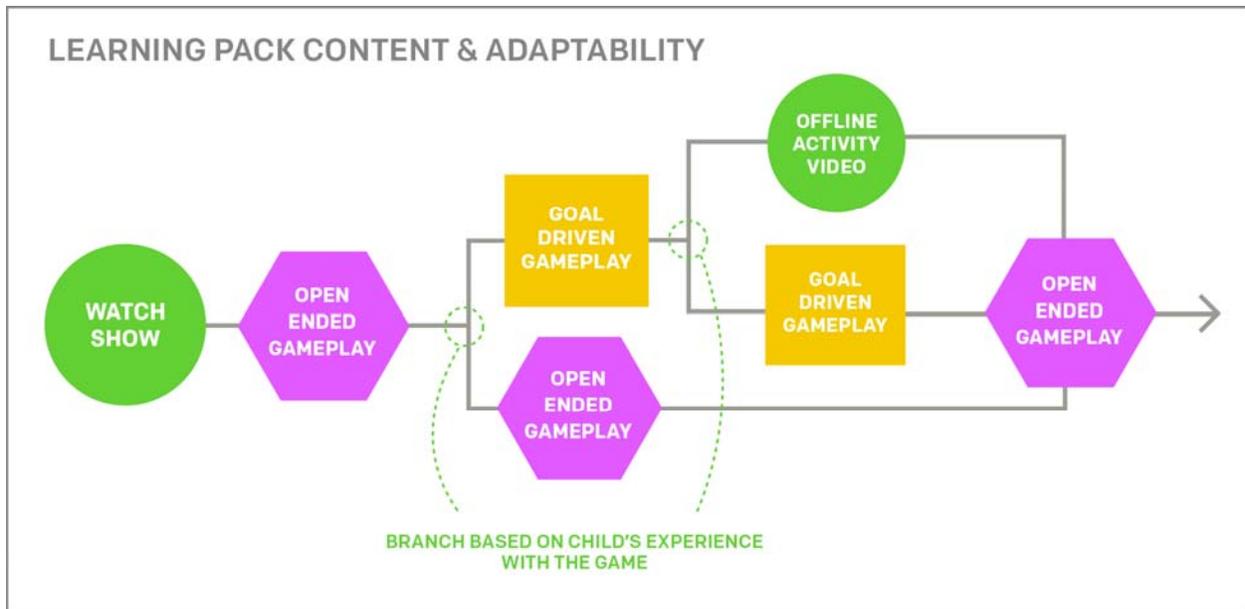
The Project’s primary innovation will be a series of free, cutting-edge Learning Packs: multi-media, cross-platform adventures centered around open-ended cause-and-effect play, and shaped by research, iterative design, and analytics and assessment to improve learning outcomes for children. The Learning Packs will build on the Skill Pack prototype created with RTL 2010-2015 funding, taking that effort to a level that breaks new ground in children’s educational media by adapting to individual users’ needs and providing personalized learning experiences.

*From Existing Skill Packs to Adaptive Learning Packs:* Skill Packs curate games, videos and challenges with characters from multiple PBS KIDS shows into larger digital experiences, each with an overarching adventure narrative and unlockable digital rewards, to focus children’s attention on a tightly related group of skills. They provide exposure to concepts, model successful problem-solving behaviors, and allow users to practice skill-related activities.

Their design relies upon pre-existing, stand-alone media assets, and they use a hard-coded, finite sequence of media assets as the foundation.

Learning Packs, on the other hand, will be designed from the ground up by teams of researchers, producers and educators. They will dynamically-adjust the cycles of exploration, instruction, and support to maximize learning outcomes. As a player moves through the Learning Pack adventure, the game sequence will adapt to his or her unique learning needs and demonstrated learning trajectory, serving up more nuanced loops or repetitions of a particular step in the inquiry process or offering new areas for exploration. A rigorous formative study will inform the behavior and adaptability of the Learning Packs and will also assess how the mix and type of content can best support different learning styles. These innovations spring from a series of embedded analytics tools discussed under Strategic Activity #2.

The Project Team will work with series producers, game developers, researchers, and educators to create original content for these experiences, which will include a robust mix of cross-property and single property experiences; open-ended and exploratory play and play for mastery (leveled games); dyad/partner collaboration models and whole-group collaborations; and digital vs. real-world inquiry-based explorations. The emphasis of Learning Packs will be on scientific process, including inquiry and exploration, rather than on teaching or learning a series of skills in a prescribed order. As such, the Learning Packs will guide players toward making observations about a system or problem; help players ask questions and make predictions; allow players to see if they were right or wrong in their predictions; help players to contemplate the information they gathered and make revisions; and support players in sharing their findings and conclusions through collaboration models that might include co-play with grown-ups and other learners.



Learning Packs will be distributed via web, mobile apps, download-to-computer models, USB, and more, and will communicate with families and caregivers through the free, downloadable Super Vision app (see Strategic Activity #2) to further support children’s learning. Please see the Appendix for an example of a concept-specific Learning Pack focused on the Kindergarten NGSS standard of Motion and Stability: Forces and Interactions and the NGSS Practice of Planning and Carrying Out Investigations. The example illustrates the various games, outcomes, supports, and adaptivity features of the Learning Pack.

**4. Deliverable: Supporting Inquiry through Collaborative Digital Play – PBS KIDS’ Kart**

**Kingdom:** The Project Team will leverage the newly-launched PBS KIDS’ virtual world, Kart Kingdom, as a safe social platform for expanding inquiry-based digital play. Kart Kingdom’s systems-thinking curriculum, developed in partnership with Arizona State University’s Center for Games and Impact, supports inquiry and experimentation and emphasizes collaboration and exploration.

As children navigate Kart Kingdom, they complete quests in their customized karts, gathering resources along the way that enable them to craft gadgets to help them further explore. As they do so, children practice systems-thinking skills essential to solving complex problems that affect all areas of their lives. The Project team will expand Kart Kingdom’s pedagogy and delve deeper into specific scientific systems defined in the NGSS. New digital content developed under the Project will connect to the world (users can play the games as part of their exploration of the world), and some may be specifically integrated into the Kart Kingdom game play. For example, a new *Ready, Jet, Go!* game featuring a solar system simulator could earn resources for the player, which then transfer to the larger virtual world, unlocking new abilities (i.e. infrared vision) or tools (i.e. robots, jetpacks, fuel etc.) that can be used in space quests.

**5. Deliverable: Parent Child Activity Videos to Model Co-Play.** A series of videos that model co-play between parents and children will support children’s learning in new ways, strategically produced to be both engaging for kids and meaningful for parents. For example, a Parent Child Activity Video supporting a *Curious George* Learning Pack will point to and model offline activities developed as part of the Project that will engage them jointly in simple engineering-based learning through play, and hands-on exploration away from screens. These videos will be in social media, on digital platforms, in PBS parents apps, and beyond.

These videos will build on research indicating that modeling positive parent-child interactions are critical tools to support effective parent engagement. As New York University Professor and early childhood development expert H. Yoshikawa notes (2013): “...The positive effects of preschool education can be augmented when a parenting education component is added, but only when this component gives parents the opportunity to see modeling of positive interactions or to practice such interactions.” Parent Child Activity Videos also represent a

critical element of the Project Team’s efforts to make the 2015-2020 RTL content as accessible to as many audiences as possible, including those with low-literacy skills who may feel overwhelmed by long pieces of text.

***Strategic Activity #2: Advance existing analytics and assessment strategies in order to create personalized learning experiences that more deeply support users, enhance learning, and generate a feedback loop for families, educators and content creators.***

***Next Generation Analytics and Learning Packs:*** Driving the innovation behind the Learning Packs described above are cutting-edge, integrated analytics and assessment that allow for adaptivity and personalization to each user’s unique learning needs. These advancements build on the formative work by PBS KIDS and leading experts from UCLA-CRESST, who have together built the foundations of an ambitious learning analytics platform that is connected to all of the ways children interact with PBS KIDS’ digital content. The new layer of analytics and assessment strategies will gather rich information about the user experience as the user plays, such as the choices made in gameplay, answers presented, speed of answer, and instruction and feedback provided needed. Drawing on this data, the Platform will calculate scores for performance measures based on behavioral indicators related to learning goals – factors such as accuracy, speed, order of operations and more – as well as on higher-level concepts that take into account contributions from multiple pieces of media. These scores will power adaptivity, allowing the Learning Packs themselves to create and provide the best path forward through the content toward a given learning goal, based on each user’s needs, and providing the most appropriate type and level of feedback and support to learners at the most optimal time.

***Impact on Families, Communities, and Learning Game Producers:*** Learning Packs and the Learning Analytics Platform will communicate with families and caregivers through the free, downloadable PBS KIDS Super Vision, a groundbreaking mobile application for parents

designed to help them better understand what their child is learning with PBS KIDS content, and to become more familiar with the games and activities that are part of their child's learning experience. Super Vision shares descriptive statistics, performance measures, and higher-level scores that give parents insight into what and how well their children are doing with given concepts, then directing them to additional offline activities that can be played away from screens to reinforce those skills. When provided with this information, parents can better engage in, understand, and ultimately guide their child's activities both on-screen and offline, ensuring that they achieve the best possible learning outcomes from their play experiences.

The Learning Analytics Platform will also aid the Project's community engagement partners, powering data-driven outreach support tools to help them conduct and evaluate local experiences and events. New tools will enable event leaders to record feedback and complete simple assessments of hands-on activities that take place at the event, and create a record/report at the event's conclusion. Devices (laptops, smartphones, tablets, etc.) on which children can access Learning Packs will be provided to Collaboratives; these devices will be connected to the Learning Analytics Platform, so facilitators have insight into attendees' experiences and progress during the event to better support young learners. Participants will be also able to create a simple login so they can continue to play at home or the next time they visit a library or other community partner site, sustaining engagement and supporting learning progression over time.

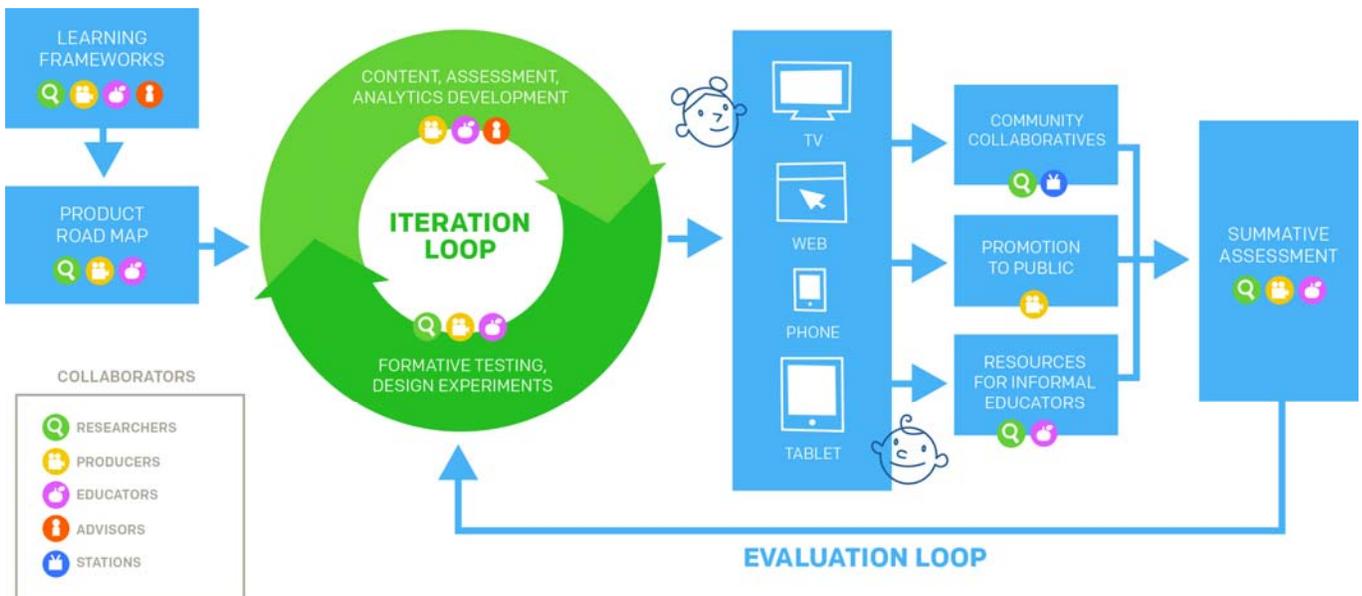
Finally, the data will also inform improvement of the games themselves by PBS KIDS developers. This ability to iterate game design based on actual usage data that illustrates which engagement and instructional approaches work best is a major innovation in the production process itself. [NOTE: PBS is committed to a safe, secure environment that family members of all ages can enjoy, and to protecting children's privacy and information. As a not-for-profit

public institution, information about individuals and their use of PBS services is only collected to enable the best online experience possible, and to implement the PBS mission. The organization has adopted reasonable technical, administrative, and physical procedures to help protect this information from loss, misuse, and alteration.]

***Strategic Activity #3: Leverage an iterative design process informed by rigorous formative research, to maximize outcomes and contribute meaningful research to the early learning field about the ways young children can learn most effectively from innovative media experiences, specifically in the areas of literacy and science.***

New Project content will be developed using a proven, iterative production process that includes the ongoing input, review and feedback of the RTL advisory board (experts and practitioners in subject matter and early learning), and space and time for iteration as the Project Team learns more about the content's effectiveness through formative and summative evaluation and on-the-ground feedback from public media stations. The process for content developed under this grant, with its emphasis on multi-platform accessibility and personalized learning, is as follows:

1. Advisors and Curriculum teams create Frameworks and map content. →
2. Producers work with Advisors, Educators, and Researchers to create video and games; producers and PBS KIDS teams use back-end systems and Learning Frameworks to design and adapt content. →
3. Outreach teams craft offline parent-child and flexible group activities to support the media content in community settings. →
4. PBS Learning Media creates and distributes lesson plans and teacher professional development for early childhood classroom educators. →
5. Collaboratives take the Learning Packs, camps, offline activities and educational resources and create the context necessary for best delivering the content on the ground in their local communities, with partners. →
6. Research team evaluates and provides feedback on all of this content, both in formative and completed stages. →
7. Continued iteration based on research findings.



### Formative Research into Content Development & Production

Education Development Center, Inc. (EDC) will serve as CPB-PBS’s research partner leading a consortium of highly-regarded research partners from SRI Education, Rockman, et al., and UCLA-CRESST. EDC brings a deep understanding of design-based formative research associated with award-winning products and experience conducting rigorous, gold-standard summative evaluation. Formative research is part of a unified research and evaluation plan, from which researchers will produce coherent lines of formative and summative research that focus on children from low-income families and gain momentum over time. The formative research process supports the iterative production approach, before the materials are produced and incorporated into effectiveness studies (see plans for summative evaluation under III. Measuring Outcomes). During the formative research stage, the multi-organizational and multi-disciplinary research team will investigate the following formative research questions:

- What design principles should guide the creation of the CPB-PBS RTL resources to ensure they address target learning goals? How can producers enact these principles to take advantage of the unique affordances of each platform, including the new Learning Analytics

platform and its emphasis on adaptivity, while also considering how each platform is part of a larger model that seeks to promote family engagement and learning?

- How well are the instructional design principles embodied in the resources meeting their intended purpose (e.g., appeal, engagement, learning)? Are the resources effectively promoting the intended learning goals?
- How can resources be improved and optimized to meet their intended purpose and better address the target learning goals?
- What lessons learned could inform future resource development and the field more broadly?

The research team will begin its cycle of collaborative, iterative formative research studies with a robust domain analysis to detail the target science and literacy learning content (Mislevy & Haertel, 2007), and generate a Concept Map: a guide to support the development and revision of productive, media-enhanced learning experiences. The Learning Frameworks for science and literacy will inform this Concept Map. Project-created materials and the identification of instruments for use in the efficacy studies. This process will ensure that (a) the materials that are developed/revised will be evidence-based and (b) the instruments assess the same target skills. Aligning the instruments to the content through the Concept Map rather than to the resources themselves ensures that there is not over-alignment to the materials when examining effects, adding to the measures' validity.

The Concept Map will be used across the Project (e.g. by researchers, instrument developers, curriculum developers and media producers) in a design-based implementation research approach (DBIR) (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003; Penuel, et al., 2011). Consistent with the tenets of DBIR, researchers will focus on complex challenges in education—supporting early science and literacy learning among children from low-income communities—

and use iterative, collaborative processes to conduct research that can inform the design of the materials, inform the field of larger theoretical issues, and result in sustainable change. In

addition to the Concept Map, other formative research tasks (detailed in the Appendix) include:

- a producer-researcher boot camp where select PBS KIDS producers, researchers, curriculum advisors and assessment developers gather to brainstorm different approaches to addressing the learning goals established through the Learning Frameworks and expanded through Concept Maps;
- a functional spec review that includes a shared set of notes for curriculum advisors and researchers on producer video and game specifications;
- a feature analysis meant to identify the characteristics of Learning Pack interventions that relate to children’s knowledge and skills, the stimulus and response formats of the materials, and complexity of cognitive, linguistic, and task demands;
- iterative rounds of coordinated play and usability testing, beginning with alpha versions;
- user group testing with target families in the Collaboratives; and
- a community engagement materials review, including parent and family resources.

***Strategic Activity #4: Surround children with opportunities for learning anytime, anywhere through connected distribution strategies and design features that support accessibility, in order to reach greater numbers while amplifying the impact of the content created under the Project.***

As with all PBS KIDS content, the Project aims to reach all children, everywhere, with anytime/anywhere learning experiences. Because 99% of the American public can receive broadcast television programming, PBS KIDS can ensure that the proposed science and literacy series will be distributed to nearly all American children, providing free access to what is often their only source of educational media. PBS KIDS content reaches more kids ages 2-5 and more

moms with kids under 6 than any other children’s TV network – 28 million kids on TV, and nearly 14 million on digital platforms – and consistently over-indexes with minority populations on air and on-line (Nielsen NPower 2014; comScore PlanMetrix, 11/2013). PBS KIDS has a dedicated focus on children and education, and learning services that reach more than 1.6 million preschool and K-12 educators. No other broadcaster or program distributor is able to offer such priority emphasis on serving the educational needs of children, families and teachers.

New science and literacy content is anticipated to mirror the significant national reach of two new properties launched under the current RTL grant: *Peg + Cat* and *ODD SQUAD*. Both of these RTL math properties have reached extraordinary numbers of young children. *Peg+Cat* (launched October 2013) reaches 3.6 million children each month on-air, has received 317 million online and mobile streams to date, and has attracted over 81.8 million pageviews of its online games as of May 2015. *ODD SQUAD* (launched November 2014) was among the top 10 shows for kids 2-8 in December 2014, received 88 million online and mobile streams within its first months, and drew over 75.4 million pageviews of its online games as of May 2015.

### **Connected Distribution Platforms to Surround Children & Support Learning**

The Project is designed to ensure that learning experiences are supported and enhanced among all points of interaction – online, on-air, offline, and on-the-ground in the community – and that parents/caregivers/educators/content creators are connected and supported through the feedback loop enabled by the Learning Analytics Platform. The Project is also designed to adapt to situations and context, meeting the needs of individual learners wherever they are: in the learning cycle, in access to technology, and physically. With the Learning Analytics Platform, content adapts to where children are in their learning progression; with the cascading distribution model (see Table 2, below), content is delivered to target audiences regardless of the

technology/platforms they have available; with mobility and ubiquity (across platforms, channels, and in shared spaces such as community centers and libraries), content is appropriated for different physical spaces.

**Table 2: Content Distribution, Cascading Model:**

<i>If content is delivered...</i>	<i>What content is included and how is the experience measured and assessed?</i>
<p><b>On a tablet with wifi OR On the web through a browser</b></p>	<p><b>Content:</b> Learning Pack (sequenced video, digital games, offline activity ideas) that adapts to child’s abilities. <b>Analytics, assessment:</b> Digitally delivered to parents and educators using the PBS KIDS Learning Analytics Platform. Parents and educators can also self-report offline activity results.</p>
<p><b>On a computer with intermittent wifi/Internet access</b></p>	<p><b>Content:</b> Learning Pack offered as a downloadable experience (sequenced video, digital games, offline activity ideas). Internet is not necessary while playing. Some adaptivity available during play, follow-up games are suggested after a full play session is complete. <b>Analytics, assessment:</b> PBS KIDS Learning Analytics Platform data is collected locally and sent to servers when Internet access is secured. Data and game suggestions are then sent to parents/educators via Super Vision or email.</p>
<p><b>On broadcast (&amp; parent has a smartphone)</b></p>	<p><b>Content:</b> Broadcast video, customizable spots that showcase digital games and suggest local places to access content (libraries, community centers, etc.). Parent receives activity ideas based on broadcast schedule through Super Vision, which also offers videos that model how activities can be completed at home. <b>Analytics, assessment:</b> Once the child visits a place that offers the digital activities (such as a library), parent can log them in and track activities and progress over time through Super Vision. Parent can also self-report activities and videos watched at home.</p>
<p><b>On Over-the-Top Devices* or pbskids.org streaming video</b></p>	<p><b>Content:</b> Video playlists of clips and full-length episodes that are curated according to the PBS KIDS Learning Frameworks, customized spots that highlight where games live on pbskids.org and how to access digital content in local area, video clips that model how activities can be completed at home. Parent receives activity ideas through Super Vision. <b>Analytics, assessment:</b> Super Vision can track videos watched on pbskids.org. Once a child visits games (at home or in the community), parents can log them in and track progress over time through Super Vision.</p>
<p><b>In the community</b></p>	<p><b>Content:</b> Videos and digital play are incorporated into the learning experiences and events conducted in high need areas by the Collaboratives. <b>Analytics, assessment:</b> Devices are all tied to the PBS KIDS Learning Analytics Platform so that facilitators can monitor attendees’ experiences and progress while at the event. Children can set up a login so that they can continue to play at home or the next time they visit a community center or library. Event leaders will also have a digital tool through which they can record feedback and complete simple assessments of hands-on activities that take place at the event.</p>

*\*such as Roku, Apple TV, Amazon Fire, Xbox, other gaming consoles. PBS KIDS already has a featured presence on all of these named devices.*

***Overcoming Accessibility Barriers.*** The Project Team is committed to implementing best practices for accessibility and will work with advisors to innovate delivery of content to children with special needs, above and beyond the closed captioning public media already employs on-air and for specific PBS KIDS web games and apps. This Project will integrate accessibility features into its design from the very beginning, working with leading experts in UDL, a research-based framework that guides the development of adaptive learning environments that can accommodate the needs of individual learners, including individuals with disabilities. This work will be guided by advisors from CAST, the nonprofit education research and development organization working to expand learning opportunities for all individuals through the development of flexible learning environments that can accommodate individual learning differences. Accordingly, the Project's Learning Frameworks will incorporate UDL recommendations for (1) Multiple Means of Representation; (2) Multiple Means of Action and Expression; and (3) Multiple Means of Engagement. The Team will investigate high-contrast options, especially for captions, as well as the ability to describe information contained in visual form (science diagrams) in the tools that producers use to support PBS KIDS best practices for content, accessibility, and multi-platform distribution. R&D into speech recognition technologies, discussed under Strategic Activity #6, may also further innovation in this area.

***Supporting English Language Learners.*** The Team is committed to reaching and engaging Hispanic audiences, especially because Hispanics represent 17% of the US population and 35% of all children living in poverty (U.S. Census Bureau, 2015; *ibid.* 2010). A holistic engagement strategy for Hispanic populations strives to make all PBS KIDS content culturally relevant, representative of diverse Hispanic cultures (cast, voices, producers) and in response to

demonstrated need as indicated by research with Hispanic families over the past several years. Though these efforts go above and beyond simple translation, Spanish language materials remain important accessibility features, and partners and PBS stations indicate that Spanish translations greatly enhance their abilities to work in communities. To that end, the Project Team will operationalize translation to Spanish (voiceover and graphic elements) across most RTL digital content within the first two years, adding to the 40 games already available in Spanish.

***Reaching Families With Limited Connectivity.*** The Project emphasizes reaching children “everywhere” with learning opportunities, and this includes those with limited or no Internet connectivity. Short video spots for broadcast and streaming platforms will highlight the learning goals of the RTL content, and local public media stations can customize these spots to highlight local resources where families can extend the learning, including places where families can access the digital content, such as libraries or community centers, if they don’t have Internet access at home. The Team also plans to experiment with a series of offline learning opportunities including card games, board games, STEM/Maker/DIY kits and more. As these are developed they will be incorporated into Learning Packs and Super Vision, integrating online and offline learning experiences and encouraging collaborative play between children and co-play between children and adults away from screens. These resources will enhance the robust collection discussed under Strategic Activity #5, below.

***Strategic Activity #5: Increase the capacity of communities to support the early learning of high-need children by a) establishing early learning collaboratives that connect public media stations with community organizations, to customize and implement Project content in diverse learning environments, and b) empower families, caregivers, and educators in their efforts to set children on the path to academic success.***

Public media is uniquely positioned to ensure that children in America’s poorest communities have access to educational content and resources that can make a difference in their early learning. In addition to the incredible reach described above, the public television station model allows for high-touch, localized community engagement, providing “last mile” services to these families and the partners who serve them.

***Supporting High-Need Children in Local Communities:*** A growing body of evidence shows that meaningful family and community engagement improves school readiness, academic achievement, and graduation rates (Hanover Research, 2015). As CPB-PBS “demonstration station” efforts and other national models have demonstrated, this is especially true for children from low-income families who are at risk of falling behind their peers in their growth and academic development.

Public media has a long history of maximizing the impact of its high quality content by embedding it within authentic community environments to reach the target audience. Through community interventions, and in partnership with local organizations that advocate for and benefit children in need, the Project Team will continue to support children and families, especially those in poverty. Stations involved in community engagement efforts also play an essential role in building community knowledge and capacity to solve education issues, while facilitating greater collaboration among community organizations (Balfanz & Fox, 2013).

***Empowering Families, Caregivers and Educators to Support Early Learning:*** PBS KIDS’ own research indicates that many parents are unsure about how best to support learning and are insecure in their own subject-matter knowledge, although engaging parents and caregivers in a child’s learning is known to amplify outcomes and promote school readiness (Snow, Burns, & Griffin, 1998). However, studies show that low-income parents who interact

with PBS KIDS' RTL content feel better about their own abilities, more aware of their child's learning, and more empowered to support that learning in the home, and learning gains for children are boosted (EDC/SRI, in preparation; WestEd, 2014). Early educators, some of whom have little formal training and/or lower literacy skills, are also in need of support. Again, research shows that preschool teachers who enact with targeted PBS KIDS resources report significant changes in their confidence and comfort with the concepts (EDC/SRI, 2013). Results such as these are an important part of the reason why, year after year, PBS KIDS ranks as the leader in parent trust among children's media providers and the No. 1 source of educational media for children in the home and at school (Caravan ORC International, January 2015).

Given the proven impact of evidence-based community engagement initiatives, the amplifying power of family involvement in a child's learning, and the demonstrated needs of early childhood educators, the Project Team has designed a comprehensive engagement strategy that positions public media stations as partners with local organizations to embed Project resources in community programs, to empower parents, caregivers and educators with resources to support learning in the home and in diverse learning environments.

### **1. Deliverable: Establishing Community Collaboratives for Early Learning & Media**

To most effectively meet the needs of children at the local level, the Project Team will establish Community Collaboratives for Early Learning and Media: an innovative model of local collaboration designed to extend the reach and impact of the Project content with high-touch, needs-based, community engagement strategies that can be developed locally and scaled nationally. Each Collaborative will consist of local networks of community partners – including organizations focused on home visitation, family health, and early learning, community technology, as well as museums and libraries – working to give all kids the best possible start.

Within each Collaborative, public media stations will serve as the educational media partner and will work to embed the Project's rich resources into effective community programming that serves low-income children and families. CPB and PBS will build on best practices in community engagement to maximize impact with audiences and work with the Collaboratives to infuse these practices in their multi-year community-based projects. Through ongoing, reciprocal, and strengths-based methods with their partners, the Collaboratives will leverage Project assets to encourage family participation in early learning; allow opportunities for families to share their knowledge, skills, and culture; help parents develop a home learning environment; and provide training to community partner staff to help them fully engage with families. To strengthen community awareness of the importance of early science and literacy skill-building and the role families play in a child's learning, stations will customize national Ready To Learn materials, such as training videos and on-air spots, with examples of local efforts. Stations will also build local awareness through social media and events, such as Back To School nights or National Summer Learning Day.

Thirty Collaboratives will be funded during the 2015-2020 grant cycle, each working to curate and adapt the Project content to meet the particular needs of their community and the expanded learning settings in which the content is distributed (e.g. libraries, housing authorities, Head Start). Moreover, the cohort of public media stations will share their experiences with each other and with the public media system as a whole, increasing stations' capacity to serve the needs of children in their communities and facilitating the sharing of best practices so that successful models can be adopted and scaled in other communities across the country. CPB and PBS will facilitate this sharing through workshops, conferences, webinars, and virtual communities, and will connect national advisors representing key organizations such as National

Head Start Association and the Institute for Museum and Library Services to local Collaboratives to support their work. Over time, the intention is that communities of practice focused on different partnership strategies will develop within the 30 Collaboratives, and that methods and successes will be shared with the public media system, as well as national partner affiliates.

The Project Team has identified the following stations and communities to serve as the initial 16 Collaboratives. Named stations have demonstrated remarkable ability to collaborate with partners such as Housing Authorities, health clinics, youth-serving agencies, and faith-based family engagement programs to serve the early learning needs of children and families; these 16 communities are among those with the highest concentration of children in poverty as identified by the Annie E. Casey Foundation’s KidsCount initiative, and represent over half of America’s children under the age of 9 who live in low-income households. An additional 14 Collaboratives will be funded in Years 3-5 from a pool of 30 applicants that conduct a needs assessment and submit Collaborative strategies in response to a round of Planning Grants issued in Year 2.

<b>Table 3. Community Collaboratives for Early Learning and Media (First 16 Locations)</b>		
<b>Stations</b> <i>(Funded in Y1)</i>	<ul style="list-style-type: none"> <li>• KBTC (Tacoma, WA)</li> <li>• WVIZ/PBS ideastream (Cleveland, OH)</li> <li>• KLRU (Austin, TX)</li> <li>• WQED (Pittsburgh, PA)</li> <li>• WFSU (Tallahassee, FL)</li> <li>• WGBH (Boston, MA)</li> </ul>	<ul style="list-style-type: none"> <li>• Detroit Public Television (Detroit, MI)</li> <li>• PBS SoCaL (Orange &amp; Los Angeles Counties, CA)</li> <li>• WCTE (Cookeville, TN)</li> <li>• Mississippi Public Broadcasting</li> <li>• Kentucky Educational Television</li> </ul>
<b>Communities</b> <i>(Funded in Y2; Stations announced in Y1)</i>	<ul style="list-style-type: none"> <li>• Iowa</li> <li>• Indiana</li> <li>• Nevada</li> </ul>	<ul style="list-style-type: none"> <li>• Missouri</li> <li>• Oklahoma</li> </ul>

**2. Deliverable: Community Resources to Support Children, Families, and Caregivers.** In partnership with Collaboratives and RTL content producers, the Project Team will develop a rich series of outreach activities and family engagement opportunities designed to deepen children’s

learning through on-the-ground, hands-on engagement with the content, to be implemented and evaluated by the Collaboratives and later scaled nationally.

**a) *Family Creative Learning Workshops:*** CPB and PBS will incorporate Ready To Learn content into a series of workshops modeled after MIT Media Lab Lifelong Kindergarten Group's Family Creative Learning workshop series that engage children and their parents to learn together as designers and inventors. The workshops will feature PBS KIDS Kart Kingdom, PBS KIDS Super Vision, and new literacy and science Learning Packs, and will also leverage the PBS KIDS Scratch Jr. app, a coding program for young learners, serving as a creative context to further explore science and literacy concepts. The Project Team will implement and evaluate these workshops with the Collaboratives.

**b) *Camps and Other Flexible Resources:*** The Project Team will create a series of camp resources to expand the learning experiences of new television properties *Ready Jet Go!* and the new science and literacy series, as well as for Learning Packs. PBS KIDS has a rich history of building RTL-funded camps proven to improve learning outcomes for children. The camps include curated and sequenced video, games, and hands-on activities and provide resources for families to extend engagement to the home. Many PBS stations have built successful partnerships with informal and formal education providers using these resources, and consistently request additional camp materials. These flexible materials provide stations and their partners with a consistent form of content that can be combined across media properties, for multiple ages, and in a variety of configurations, such as half- or full-day increments.

**c) *Grassroots Engagement Models.*** To complement the national communications effort, CPB will independently fund three pilot projects during Years 1 and 2 to explore grassroots strategies for community and parent engagement that have shown promise in their early stages.

1) Detroit Public Television will develop *Preschool U*, a media-enhanced guide for parents and caregivers that uses PBS KIDS content to model effective strategies for supporting early science and literacy development; 2) Rocky Mountain PBS (Colorado) will create messaging strategies to reach parents and informal early childcare providers to direct them to content and information about healthy early childhood development and learning; and 3) WGBH (Boston) will produce resources to build the capacity of stations and their partners to become stronger developers of educational media engagement that uniquely serves their communities and adapts to specific educational settings. The Project will fund and scale the strongest model starting in Year 3.

**3. Deliverable: Engaging Parents and Caregivers through Mobile & Social Media.** Outreach to parents will begin with research to inform strategy and to gain new insights into the needs and expectations of parents and guardians when it comes to helping them support their children's learning, especially among those who live in poverty. The Project Team will use this information to develop a series of culturally sensitive messages for communicating directly with parents and caregivers about available resources and key best practices to support children's learning.

With the rapid adoption of smartphones in low-income communities, reaching parents via social media is a priority. The Project team will develop a series of mobile communications strategies for parents and caregivers, which will be tested locally with Collaboratives to determine the most engaging and effective messages across platforms, then iterated and scaled nationwide. The Project Team will maximize access to existing, successful PBS KIDS social media platforms including Facebook, Twitter, Pinterest, Vine, Tumblr and the PBS KIDS YouTube channel.

To reach new parent audiences on social media networks, PBS will seek out parent content creators who have fresh voices and established followings. These parent producers will

create videos for social media that showcase real-world parent and child interactions to support science inquiry and literacy skills.

**4. Deliverable: Resources to Support Early Childhood Educators.** While the majority of PBS KIDS content is being optimized for use in informal settings, the Project offers a unique opportunity to reach thousands of early childhood educators and engage them with research-based, purpose-built resources to support classroom instruction. All content and materials developed under the Project will be aggregated on the PBS education distribution platform, PBS LearningMedia (PBSLM). PBSLM, a partnership of PBS and WGBH Educational Foundation, is a free media-on-demand service offering educators a robust library of educational resources they can search, save, and share. Nationwide, more than 1.6 million teachers have registered access to more than 100,000 digital resources available through PBSLM, and early childhood educators have been a steadily growing audience on with the service since its launch, with the most accessed early education resources being those that address science concepts, reading and other English language arts concepts.

The Project's content will be accessible via collection pages that will include links to all digital games, as well as immediate access to the Project's research and parent and educator content. In collaboration with national partners, PBS will contextualize all RTL content for formal classrooms, develop professional development resources and create new opportunities to introduce early childhood educators to digital media integration best practices. PBS will engage the PBS Digital Innovators, education technology leaders who mentor their colleagues in using digital media, to help develop all new educator materials.

A recent SIMBA survey (2012) found that educators seek professional learning opportunities to support standards-based instruction through the use of technology in the

classroom. The need for professional development is especially critical in the early childhood field, where practitioners often have little formal training, and video clips – especially those that model best practices – can be especially valuable. The Project Team will collaborate with the National Association for the Education of Young Children (NAEYC) and Boston University School of Education (BU-SED) to create professional development content and opportunities to support the effective integration of content in preschools and early-childhood classrooms.

**5. Deliverable: Communications Support for the Project.** PBS will hire a PR agency to help build national awareness of the RTL grant resources. The agency will seek media coverage with national media outlets, including traditional and social media channels. The agency will also work closely with the Collaboratives to assist them in telling their story of innovation and impact. Additionally, the team will develop PR and social media messages about the grant, project partners, new content, and research findings; host webinars to train public television station teams; support the launch of all new content; and provide communication support informed by station needs.

**Strategic Activity #6: Explore the next frontier of technology in educational contexts through the research and development of innovative learning experiences for children.**

PBS has a long history of evaluating cutting-edge technologies and considering how they might be used for educational, rather than commercial, purposes. There are several new digital technologies that the Project Team will explore expanded and innovative opportunities for learning, technologies that have the potential to further the Project’s education goals through low-cost distribution or inclusion in outreach activities. Digitally enhanced/connected toys, wearable devices, and speech recognition software have all made considerable splashes in the marketplace over the past few years and represent interesting ways in which the experiences that

children and families have with PBS KIDS content could be extended and enhanced. Wearables and connected toys can inspire kids to move away from the screens to real-world, inquiry-based play, and R&D in this area will reveal how the Project might leverage such tools to keep kids connected to the learning being modeled through PBS KIDS' shows while engaging in real-world exploration. Speech recognition has the potential to revolutionize how digital tools can support literacy development and accessibility needs. Experiments with these technologies in the first years will yield new information that may drive new types of game play for products/outreach in the out years of the grant.

### **III. MEASURING OUTCOMES**

To capitalize on the multiple compelling research opportunities called for by the RFP, the Project's research partner, EDC, assembled a top-flight consortium of research firms (EDC, SRI, Rockman, CRESST) that have a reputation for balancing well-established, highly regarded research methodologies with cutting-edge approaches. Since 2006 EDC has served as the summative evaluation research partner to CPB-PBS, contributing important research on early learning and media. Its 2009 RTL study was the first large-scale randomized controlled trial recognized by the What Works Clearinghouse to result in positive early literacy outcomes among 4-year-old children in an evaluation of media-rich supplemental classroom materials (Penuel et al, 2009). From 2015-2020, the consortium will add to this growing knowledge base through the series of efficacy studies discussed below. (See Appendix for full descriptions of all studies; Collaborative technical assistance plan; research dissemination plan; and timeline.)

***Longitudinal Family and Engagement Study:*** The first of its kind, this longitudinal study will provide important new insights about how children and families engage with RTL PBS KIDS resources over time and the benefits of this engagement. Researchers will conduct a

context study in select Collaborative locations to understand how families are using media and technology, how they support science and literacy learning, and where the two converge. By following a subset of families throughout the five-year grant, researchers will document how family engagement with public media resources, including community engagement activities, influences the outcome at the core of the RTL Initiative: school readiness. Beyond its intrinsic value, this line of research will provide essential context for subsequent efficacy research. This work will extend existing studies (Rideout, 2014; e.g., Common Sense Media, the Joan Ganz Cooney Center) and EDC/SRI's RTL research with parents and families.

***Learning Packs Research:*** Building on the formative research, the research team will conduct several small-scale studies to examine learning and implementation of content from specific new properties, along with PBS KIDS Super Vision. Each study will be an exploration of the adaptive cause and effect play experiences at the center of Learning Packs and supporting curated resources that include videos, online games, printable materials, adaptive functionality, and supplementary non-media learning experiences, designed for use in homes, by children and families. The studies will be designed to engage 50 families for three to four weeks.

***Feasibility and Efficacy Studies:*** The Researchers will conduct 4 interconnected summative evaluation studies, 2 feasibility studies and 2 efficacy studies (see Table in the Appendix). Feasibility studies are needed to test the implementation and instrumentation of the randomized-controlled trial (RCT) efficacy studies. The overarching goal of the efficacy studies is to assess how adaptive, multi-platform experiences support children's learning of target science and literacy skills. RCT efficacy studies represent the culmination of the summative evaluation research cycles and will be designed to provide the strongest measure of the efficacy of RTL resources. They will build from studies on the Learning Packs and will capture the range

of ways low-income families from different racial/ethnic backgrounds interact with media. They will be fielded in the Collaboratives and will address the following questions:

1. To what extent does the CPB-PBS RTL Initiative model, including Collaborative engagement resources and methods, increase the number and quality of families' interactions with Learning Packs?
2. To what extent do engagements with PBS KIDS science or literacy Learning Packs interventions support children's learning of science content and literacy skills?
3. To what extent do engagements with the CPB-PBS RTL Community Collaborative model, including Super Vision resources, increase caregivers' science inquiry and child development knowledge, or understanding of early literacy and language development, and positively influence their attitudes and behaviors in ways that support children's learning?

Researchers will use similar strategies and instruments and, where possible, will examine aspects of both science and literacy learning across all 4 studies. The study designs will leverage Collaboratives' existing relationships, recruiting through informal learning spaces such as science museums, housing authorities, libraries, and community centers. Each community organization will promote the opportunity to engage with the science or literacy Learning Packs by participating in the studies but will not be responsible for delivering the intervention, which will be home-based. Researchers also will identify or develop (if necessary) key measures that will be piloted in the feasibility studies and used in the efficacy studies. These measures will address families' and children's engagement with the resources; parent/caregiver outcomes, and children's literacy skills or science knowledge and inquiry skills. These studies will include standardized assessments of child learning and/or researcher-developed assessments of learning outcomes as well as researcher-developed measures targeting family experiences with study

resources. Additionally, building on CRESST's early experience developing the PBS KIDS Learning Analytics Platform technologies and the embedded assessment and personalization components for new Learning Packs, researchers will analyze the characteristics and effects of embedded assessments. Using feature analysis, researchers will apply a rigorous, qualitative approach to identify the characteristics of interventions that relate to knowledge and skills of children, the stimulus and response formats of the materials, and complexity of cognitive, linguistic, and task demands.

Because the Collaboratives will be assisting with recruitment but are not providing any components of the intervention, the science and literacy Efficacy studies will use a person-randomized design. While final selection of child outcome measures will be made during the grant, the research team has conducted representative power analyses based on available information to determine the minimal detectable effect size (MDES) for which each planned study is powered, using Optimal Design software (Spybrook, Bloom, Congdon, Hill, Martinez, & Raudenbush, 2012). The science Efficacy Study assumes the following parameters: 250 child participants and their parents/guardians,  $\alpha = .05$ , power of .80, and covariates that explain 40% of the variance in the child-level outcome (based on previous studies using LENS, a computer-adaptive, Item Response Theory-based science assessment, Greenfield et al, 2015). The MDES for the Science Efficacy Study is .27. To estimate the MDES for the literacy Efficacy Study, it is appropriate to apply the same assumptions used for the Science Efficacy Study power analysis, as previous studies using measures such as the Expressive Vocabulary Test 2 as the dependent variable demonstrate that covariates explain at least 40% of the variance (Goodson, Wolf, Bell, Turner, & Finney, 2010). The anticipated MDES for this study also is .27.

#### **IV. MANAGEMENT PLAN**

The Project is a collaboration between CPB and PBS, who for 20 years have successfully led and delivered RTL initiatives. The Project's seasoned leadership team will ensure that the Project and its deliverables deliver on time, within budget and in compliance with federal rules and regulations. CPB and PBS will leverage existing human and institutional resources and infrastructure to ensure the Project's successful implementation. With consistent 'high quality' Government Performance Results Act review scores and a proven record of adhering to industry standards and generally accepted accounting principles (US GAAP), CPB and PBS have demonstrated exceptional management performance that will be leveraged for the 2015-2020 RTL cycle. CPB and PBS have a pre-existing memorandum of understanding (see Appendix) allowing the Project Team to begin addressing first-year objectives immediately upon award, and to continue in Years 2–5 with sustained effort and high-level performance.

### **Organizational Roles and Responsibilities**

**CPB** will serve as fiscal agent and will supervise the compliance, monitoring and reporting of the grant in accordance with EDGAR regulations, and will lead the station engagement and research components of the Project. CPB invests in innovative public telecommunications services to support the American public. It has a breadth of experience providing sound fiscal management and a track record in funding the leading children's content producers nationwide. As stewards of the federal government's investment in public media, CPB has mechanisms in place to ensure accountability, management quality, and continuous improvement of management, including an internal, independent Inspector General (IG). The IG's mission is to conduct independent and objective audits and investigations relating to the organization's programs and operations; promote economy, effectiveness, and efficiency within the organization; and prevent and detect fraud, waste, and error in programs and operations.

**PBS** will lead production and distribution of all content and will oversee content producers, will manage the learning analytics platform, and will execute communications and marketing strategies. For more than 40 years, PBS has worked with diverse producers to create and distribute effective, high-quality children’s transmedia content. PBS has a nationally-recognized, seasoned senior management team which includes a federal grants compliance officer as well as senior business, legal and financial professionals experienced in managing large, federally-sponsored projects. The corporate management structure supports development and delivery of high-quality educational content.

### **Project Management**

CPB and PBS are committed to employing women, minorities, and people from underrepresented populations and will not discriminate against any individual on the basis of race, color, religion, national origin, sex, age, pregnancy, marital status, personal appearance, sexual orientation, family responsibilities, physical or mental handicap or disability, matriculation, or political affiliation. The boards of CPB and PBS annually implement plans to ensure and maintain diversity in their workforces.

CPB and PBS have a disciplined approach to project planning and have created realistic management schedules, timelines, and budgets. *Please see the Appendix for detail on the Management Plan and Project Team members, including biographies and an organizational chart that depicts the Project’s integrated organizational structure.*

**Executive Oversight:** *Debra Sanchez, Senior Vice President of Education (CPB)* and *Lesli Rotenberg, General Manager, PBS KIDS* will provide executive oversight for the project. Ms. Sanchez develops and oversees children’s content investments and educational initiatives. She

works with stations to enhance the development and execution of local educational services. Previously, she was VP, Government Relations for the Association of Public Television Stations. Ms. Sanchez also has 8 years' classroom experience designing individualized learning and behavioral interventions. She holds a B.S. in special education from Indiana University. Ms. Rotenberg leads a cross-disciplinary team charged with content production, web development, multi-platform asset distribution, education resources, marketing and communications.

**Strategic Oversight:** *VP of Education Michael Fragale (CPB) and VP, PBS KIDS Digital Sara DeWitt* will provide strategic oversight for the project. They will meet regularly with the Executive Director and Senior Director to provide strategic direction, oversee decision making, and ensure that the project is on track with respect to its goals, timeline, and budget. Mr. Fragale will provide strategic counsel to the management team on operations, compliance, policy, and engagement. He leads CPB's strategic education projects and content investments and connects CPB's efforts with public media stakeholders and national educational organizations. Ms. DeWitt oversees development of PBS' multiplatform digital content for kids and families. She will serve as the Content Development Team's lead executive at PBS and will provide in-kind support to supervise the development of all multiplatform digital experiences.

**Operational Oversight:** CPB and PBS have developed cooperating teams within each organization to manage operations of the RTL Initiative—a Research, Community Engagement and Project Management Team at CPB and a Content Development, Distribution and Communications Team at PBS.

***Research, Community Engagement and Project Management Team (CPB):*** *Pamela Johnson*, Ph.D., Executive Director (100%): Dr. Johnson, the current Executive Director of RTL for CPB,

will continue to provide operational leadership for the proposed project. Reporting to VP of Education and in collaboration with the RTL Sr. Director (PBS), she will be responsible for overall project management, partner relations, community engagement, research and evaluation. Previously, Dr. Johnson was VP for Education & Outreach at WNED/Buffalo-Toronto, where she established an innovative digital learning service called ThinkBright; was head of National Outreach and Web for Reading Rainbow; and Director of Online Teacher Professional Development Service for PBS TeacherLine in New York. She holds a Ph.D. in educational organization, administration, and policy. Barbara Lovitts, Ph.D., Director of Research and Evaluation (100%): Dr. Lovitts will provide leadership and direction in guiding and implementing the RTL Initiative research agenda, ensuring that the grant functions for execution and administration of research and evaluation are aligned and support achievement of the project's educational strategy. Her previous experience includes service as a Program Officer at Abt Associates, Inc., and the Center for the Advancement of Scholarship on Engineering Education at the National Academy of Engineering. Dr. Lovitts holds a Ph.D. in sociology from the University of Maryland. Devon Steven, Director of RTL Community Engagement (100%): Ms. Steven will manage the Community Collaboratives for Early Learning and Media, ensuring successful development and implementation of strategies to connect RTL content to communities most in need. In addition to 13 years experience in public media, she has worked as an educator in formal and informal settings from elementary through post-secondary levels. She holds an Ed.M. in Technology in Education from the Harvard Graduate School of Education.

***Content Development Team (PBS):*** David Lowenstein, Senior Director, Ready To Learn (100%): Mr. Lowenstein, the current Senior Director of RTL for PBS, will continue to lead the digital and video Content Development Team at PBS. Reporting to the VP of PBS KIDS Digital

and in collaboration with the RTL Executive Director, he will oversee content development activities including staff management, budgets, game and video production, producer and vendor relationships, and acquisition of project support and resources. He will ensure integration of project content into the wider PBS distribution strategy. Anne Lund, Curriculum Director (100%): Ms. Lund will lead the development of the science and literacy Frameworks and will work with producers to ensure efficacy and age-appropriateness of all new content.

***Additional Support Staff:*** The RTL Executive Director at CPB will oversee a highly skilled team, including the Research Director, a Project Manager, Budget Analyst, and a Project Coordinator. The RTL Senior Director at PBS will oversee a skilled digital media production team that will manage delivery, development, integration, data management, and communications around all new content. This team includes a Content Manager, Curriculum Director, Parent and Teacher Content Manager, Web Developer, Web Technologist, System Administrator, Marketing Coordinator and an Associate. The budget narrative includes a detailed description of staff roles and responsibilities. All of these positions are 100 percent allocated to the grant.

***Additional Senior-Level Support (Non-RTL funded):*** Linda Simensky, Vice President, *Children's Programming*: Ms. Simensky will provide in-kind support to oversee the production of original video content for the project. Sharon Philippart, Senior Director, *PBS KIDS Marketing & Communications*: Ms. Philippart will provide in-kind support to oversee marketing and communications and outreach content for the project. Angela Johnson, Director of Financial Reporting and Analysis (CPB) will provide in-kind support to oversee financial management of the cooperative agreement including financial reporting and compliance with federal regulations.

### **Advisory Board:**

The RTL National Advisory Board will proactively inform the development of content, programs, approaches, and models; to provide broad feedback on the quality of the resources; and to support awareness-building of RTL in their individual fields of expertise. The Board will be composed of a diverse group of individuals who can provide expert guidance in literacy and science instruction, technology/accessibility, community engagement, and early learning and media. They will meet at least one time in person and several times virtually each year. All board members have committed to serve. *Please see the Appendix for complete biographies of the Advisory Board members, as well as expectations for participation.*

***Science Curriculum Advisors:*** Sara Sweetman, Director of Education for the University of Rhode Island's Guiding Education in Math and Science Network (GEMS-NET). Dr. Kimberly Brenneman, Assistant Research Professor, National Institute for Early Education Research and the Rutgers Center for Cognitive Science (Rutgers Graduate School of Education). Dr. Bryan Brown, Associate Professor of Education (Stanford Graduate School of Education).

***Literacy Curriculum Advisors:*** Dorothy Strickland, Professor Emeritus & Distinguished Research Fellow at Rutgers Graduate School of Education. Julie Wood, International Digital Literacy Consultant. Sharon Darling, President & Founder of the National Center for Family Literacy. Rachael Walker, Educational Outreach & Children's Literacy Consultant. Yuuko Uchikoshi-Tonkovich, Associate Professor, School of Education, University of California-Davis. Rebecca Silverman, Associate Professor, College of Education, University of Maryland. Nell K. Duke, Professor, School of Education, University of Michigan.

**Classroom Educators:** Flor Retamal, Head Start/Pre-K Teacher, Chicago Public Schools. Allison Frometa, Kindergarten Teacher, Chelsea Public Schools (MA).

**Technology Advisors and UDL, ELL/DLL, Accommodating Disabilities:** David H. Rose, Chief Education Officer for CAST. Michael Conn-Powers, Center Director, Indiana Institute on Disability and Community's Early Childhood Center. Kevin Clark, Founding Director, Center for Digital Media Innovation and Diversity, George Mason University. Sabaa Rehmani, Interactive Game Producer. Chris Dede, Timothy E. Wirth Professor in Learning Technologies, Harvard University. Sowmya Subramanian, Engineering Director, YouTube Verticals at Google. Larry Irving, President and CEO, Irving Group.

**Community Engagement:** Richard Noriega, President & CEO of AVANCE. Vikki Katz, Associate Professor, School of Communication and Information, Rutgers University. Scott Hippert, President & CEO, Parents as Teachers. Michael Rich, Founding Director & Associate Professor, Center on Media and Child Health, Harvard University. Ralph Smith, Senior Vice President, Annie E. Casey Foundation; Managing Director, Campaign for Grade Level Reading. Renee Wilson-Simmons, Director, National Center for Children in Poverty. Maura Max, Deputy Director for Library Services & Acting Director, Institute of Museum and Library Services. Rhian Evans Allvin, Executive Director, National Association for the Education of Young Children. Joan Lombardi, International Expert on Child Development & Social Policy.

### **Project Partners**

CPB and PBS have a 45-year history of working with distinguished content creators, distributors, and partners at national, state, and local levels. This Project includes strategic partnerships with nationally-recognized producers and education partners including BU-SED, NAEYC, and the

National Center for Children in Poverty. These partnerships will help ensure that we reach the target population of children, teachers, and parents; sustain relationships in target communities; and support the development of resources that are educationally effective. Each organization, with support from targeted PBS stations, will help build strong communities of practice by facilitating local engagement initiatives that raise awareness and build strong community and parental support within various learning environments. Select content producers are included in this proposal due to the unique and established educational value of the respective characters and content; this content is already associated with public broadcasting, and each property's content goals fit within either the existing literacy Learning Framework or the proposed science Learning Framework. Other educational partners were selected because of their qualifications to help us meet the educational goals and objectives solicited by the RFP. The Project Team may also procure external vendors to achieve the project's goals and deliverables as needed.

### **Communications and Coordination**

*Among Project Partners:* The Project Team is practiced in and commits to regular calls, meetings, and other communications methods to facilitate development of ideas and decision-making. The Project Team will use an online collaboration and project management tool, such as Basecamp, to share deliverables and manage shared documents and timelines.

*Between Agencies:* The Project will convene early learning leaders and service system liaisons from the U.S. Departments of Education, Health and Human Services and Housing and Urban Development to provide project updates, showcase emerging content, and make joint plans to share and disseminate early learning content and best practices with the field.

*Supporting Partners Through Virtual Communities.* CPB and PBS will maximize social media and digital communications platforms to connect national and local work with producers,

partners, stations, experts, advisors and national leadership through both closed and open communities. The Team will host a closed virtual community to support the Collaboratives; this platform will be established to share best practices, promote resources developed both locally and nationally, and aid in the scaling of community efforts. The Team will also host a Facebook community for the full RTL Work Group, to include CPB, PBS, Collaboratives, researchers, national partners, advisors, experts and producers.

**Project Timeline**

Following is an overview of the key milestones by year in the Project timeline. A timeline detailing all activities by month is located in the Appendix.

Summary Timeline
<p><b>Year 1:</b> Develop/deliver Frameworks. New content for The Cat in the Hat Know a Lot About That! (episodes), Curious George (games), Ready Jet Go! (episodes, games), and Ruff Ruffman (videos, games, Learning Pack prototype). New literacy series (pilot development). New science series (videos, pilot and series development, games). Cross-property Learning Pack R&amp;D. Super Vision updates. Digital experiments R&amp;D. Kart Kingdom. Parent Child Activity Videos. Formative and longitudinal research. Collaboratives Phase 1. Develop national outreach resources. Ongoing analytics development, usability testing, and advisor input/feedback and communications.</p>
<p><b>Year 2:</b> New content for new literacy series (pilot and series development, games), The Cat in the Hat Knows a Lot About That! (episodes, app, Learning Pack), Curious George (games), Ready Jet Go! (episodes, games), Ruff Ruffman (games, Learning Pack prototype), and new science series (episodes, games). Cross-property Learning Pack R&amp;D. Digital experiments R&amp;D. Kart Kingdom. Parent Child Activity Videos. Collaboratives Phases 1 &amp; 2. Teacher PD. Learning Pack research/evaluation. Ongoing analytics development, usability testing, advisor input/feedback, and communications.</p>
<p><b>Year 3:</b> New content for new literacy series (episodes, web, app), The Cat in the Hat Knows a Lot About That! (games), Curious George (games, Learning Pack), Ready Jet Go! (episodes, games, Learning Pack, app), new science series (episodes, videos, games). Digital experiments R&amp;D. Kart Kingdom. Parent Child Activity Videos. Super Vision updates. Collaboratives Phases 1 &amp; 2. Teacher PD. Formative, longitudinal, and efficacy research. Ongoing analytics development, usability testing, advisor input/feedback, and communications.</p>
<p><b>Year 4:</b> New content for new literacy series (episodes, games, Learning Pack), The Cat in the Hat Knows a Lot About That! (games), Ready Jet Go! (episodes, games, app), new science series (episodes, games). Cross-property Pre-K Learning Pack. Digital experiments R&amp;D. Kart Kingdom. Parent Child Activity Videos. Collaboratives Phases 1, 2, 3. Teacher PD. Formative, longitudinal, and efficacy research. Ongoing analytics development, usability testing, advisor input/feedback, and communications.</p>
<p><b>Year 5:</b> New content for new literacy series (games), Ready Jet Go! (games), Ruff Ruffman (videos), new science property (episodes, Learning Pack). Super Vision updates. Digital experiments R&amp;D. Kart Kingdom. Parent Child Activity Videos. Early elementary Learning Pack. Super Vision updates. Collaboratives Phases 1, 2, 3. Teacher PD. Formative, longitudinal, and efficacy research. Ongoing analytics development, usability testing, advisor input/feedback, and communications.</p>